Exhibit 540-31 Worksheet for Documenting an Environmental Evaluation of NRCS Plant Releases

Introduction

This worksheet is used to conduct and document an Environmental Evaluation of Plant Materials releases. Criteria relating to the biological characteristics of a plant, the potential impact on ecosystems, the ease of managing the plant, and conservation need are scored. These scores and their interpretation are used with a decision flowchart to determine the appropriate course of action for making a release. As with any such ranking system, it is necessary to use sound judgement and experience when interpreting the final results.

Understanding this worksheet

The primary purpose for this worksheet is to determine if the plant release has the potential to adversely affect the environment or natural surroundings. It is possible for a plant to rate low on Part 1 (Impact on Habitats), and thus be released without further consideration, and still have a high rating on Part 4 (Biological Characteristics) indicating that the plant has the ability to propagate and maintain itself naturally. Good conservation plants usually need to persist to be able to solve the conservation problem or need for which they were intended. This is even more important for plants used in critical areas, i.e. severely eroding sites. In light of this fact, the most important criteria being used in this worksheet to determine release include those in Part 1 (Impact on Habitats) and Part 2 (Ease of Management). Parts 3 (Conservation Need) and 4 (Biological Characteristics) are used when the decision is not so clear and there is the potential for a high impact on habitats and control may be moderate to difficult.

Instructions

Rate the plant or release based on the following criteria by circling your assessment. If the criteria does not apply to the species or release, then do not rate for that criteria. If you do not have enough information on the species or plant release to complete at least Parts 1, 2 and 4 in Section A, then additional data must be accumulated through literature searches, cooperators, or studies to be able to complete these sections. Additional notes which may be used to clarify or interpret the ranking should be included in the margins of this worksheet. For plant releases which may be considered nearly unacceptable for release it may be helpful to have other PM staff or cooperators complete copies of this worksheet to provide additional documentation.

All rating criteria must be completed, even if it is found in Section A, Part 1 that the plant has a low impact on the environment. Evaluation of all criteria will provide documentation that a thorough evaluation was completed for the plant at the time of release. This documentation may be needed in the future if questions are raised about the potential invasiveness or control of the plant.

When finished with ranking, interpretation, and decision making, record the final decision on the next page of this worksheet. A completed worksheet must be included with the release documentation and a copy sent to the NPMC for filing.

Environmental Evaluation of Plant Materials Releases

Name of person scoring: _____ **Date of scoring:** _____

Scientific Name: _____ **Common Name:** _____

Release Name: _____

Is the plant native to the US? **Yes** **No**

Is the plant native to the area of intended use? **Yes** **No**

Authority used to determine native status: _____

What is the intended area of use for this plant? _____

What is the intended use for this plant? _____

Areas in which the release is known to be invasive or has a high probability of being invasive: _____

Summary of Criteria from Section A	**Score**
Part 1. Impact on Habitats, Ecosystems, and Land Use	_____
Part 2. Ease of Management	_____
Part 3. Conservation Need and Plant Use	_____
Part 4. Biological Characteristics	_____

Final Determination of Release Based on the Environmental Evaluation:

- ☐ **OK to Release**
- ☐ **OK to Release but qualify use and intended area of use***
- ☐ **Do Not Release - NPL determines if release is made***
- ☐ **Do Not Release - document and destroy materials**

I certify that this Environmental Evaluation was conducted with the most accurate and current information possible.

_____

Signature of Person Scoring Date

Signature of NPL indicating that it is OK to make the release:

_____ _____

National Program Leader, PM **Date**

* An Environmental Assessment (EA) and/or Environmental Impact Statement (EIS) may be required prior to release. If required, attach the EA and/or EIS to this worksheet and to the release notice.

Section A. Scoring of Criteria for Impact, Management, Need and Biological Characteristics

Circle the appropriate number for each of the following criteria. Add up the scores for each part and record at the end of each part. Comments which clarify answers or provide supporting information may be included in the right margin of the worksheet or attached on a separate sheet of paper.

Part 1: Impact on Habitats, Ecosystems, and Land Use

This section assesses the ability of the species or release to adversely affect habitats, ecosystems, and agricultural areas.

1) Ability to invade natural systems where the species does not naturally occur

a)	Species not known to spread into natural areas on its own	0
b)	Establishes only in areas where major disturbance has occurred in the last 20 years (e.g., natural disasters, highway corridors)	3
c)	Often establishes in mid- to late-successional natural areas where minor disturbances occur (e.g., tree falls, streambank erosion), but no major disturbance in last 20-75 years	6
d)	Often establishes in intact or otherwise healthy natural areas with no major disturbance for at least 75 years	10

2) Negative impacts on ecosystem processes (e.g., altering fire occurrence, rapid growth may alter hydrology)

a)	No perceivable negative impacts	0
b)	Minor negative impacts to ecosystem processes	2
c)	Known significant negative impacts to ecosystems processes	6
d)	Major, potentially irreversible, alteration or disruption of ecosystem processes	10

3) Impacts on the composition of plant communities where the species does not naturally occur

a)	No negative impact; causes no perceivable changes in native populations	0
b)	Noticeable negative influences on community composition	5
c)	Causes major negative alterations in community composition	10

4) Allelopathy

a)	No known allelopathic effects on other plants	0
b)	Demonstrates allelopathic effects on seed germination of other plants	3
c)	Demonstrates allelopathic effects to mature stages of other plants	5

5) Impact on habitat for wildlife or domestic animals (aquatic and terrestrial), including threatened and endangered species (coordinate with USFWS and state Heritage Programs as appropriate)

a)	No negative impact on habitat, or this criteria not applicable based on intended use for the plant	0
b)	Minor negative impact on habitat (e.g., decreased palatability; lower wildlife value; decreased value for undesirable animal species)	2
c)	Significant negative impact on habitat (e.g., foliage toxic to animals; significantly lower value for wildlife; excludes desirable animal species from an area)	5

6) Impact on other land use

a)	No negative impacts on other land uses	0
b)	Minor impacts (plant could invade adjacent areas and decrease its value)	3
c)	Significant impacts (plant may alter the system or adjacent lands significantly enough to prevent certain uses)	5

Total Possible Points 45

Total Points for Part 1 _____

Part 2. Ease of Management

This part evaluates the degree of management which might be needed to control the species or release if it becomes a problem, or eradicate the species or release if it is no longer desirable.

1) Level of effort required for control

a)	Effective control can be achieved with mechanical treatment	0
b)	Can be controlled with one chemical treatment	2
c)	One or two chemical or mechanical treatments required or biological control is available or practical	5
d)	Repeated chemical or mechanical control measures required	10

2) Effectiveness of community management to potentially control the plant release

a)	No management is needed, the plant release is short-lived and will significantly decrease or disappear within 5 years under normal conditions without human intervention	0
b)	Routine management of a community or restoration/preservation practices (e.g., prescribed burning, flooding, controlled disturbance, pasture renovation) effectively controls the release	2
c)	Cultural techniques beyond routine management can be used to control the release	4
d)	The previous options are not effective for managing or controlling the release	10

3) Side effects of chemical or mechanical control measures

a) Control measures used on release will have little or no effect on other plants	0
b) Control measures used on release will cause moderate effects on other plants	3
c) Control measures used on release will cause major effects on other plants	5

**If spreads by seed, or both seed and vegetative means, go to #4
**If spreads by vegetative means only, go to #5

4) Seed banks

a) Seeds viable in the soil for 1 year or less	0
b) Seeds remain viable in the soil for 2-3 years	1
c) Seeds remain viable in the soil for 4-5 years	3
d) Seeds remain viable in the soil for more than 5 years	5

5) Vegetative regeneration under natural conditions

a) Regeneration from resprouting of cut stumps	1
b) Regeneration from pieces of the root left in the soil	3
c) Regeneration from root or stem parts left in the soil	5

6) Resprouts after cutting above-ground parts

a) Does not resprout or resprouts but the release is sterile and does not produce seed	0
b) Resprouts and produces seed in future years	3
c) Resprouts and produces seed in same year	5
Total Possible Points	**40**
Total Points for Part 2	_____

Part 3. Conservation Need and Plant Use

This part evaluates the importance of the species or release to meet a conservation need.

1) Potential Use(s) of the Plant Release

a) Used for low-priority issues or single use	1
b) Has several uses within conservation	2
c) Has many uses within conservation as well as outside of conservation	4
d) Has high-priority use within conservation	5

2) Availability of Other Plants to Solve the Same Need

a) Many other plants available	1
b) Few other plants available	3
c) No other plants available	5

3) Consequences of <u>Not</u> Releasing This Plant

a) No impact to conservation practices	0
b) Minor impact on one or more conservation practice	1
c) Serious impact on one conservation practice	3
d) Serious impact on more than one conservation practices	5
Total Possible Points	**15**
Total Points for Part 3	_____

<u>Part 4. Biological Characteristics</u>

This part evaluates the biological properties which indicate the natural ability of the species or release to propagate and maintain itself under natural conditions. Note: these criteria relate to the species <u>under natural conditions</u>, as opposed to the species under managed conditions used to increase the species, i.e. seed increase programs, or specific propagation methods which do not normally occur in nature.

1) Typical mode of reproduction under natural conditions

a) Plant does not increase by seed or vegetative means (<u>skip to #11</u>)	0
b) Reproduces almost entirely by vegetative means	1
c) Reproduces only by seeds	3
d) Reproduces vegetatively and by seed	5

2) Reproduction (by seed or vegetative) in geographic area of intended use

a) Reproduces only outside the geographic area of intended use	1
b) Reproduces within the geographic area of intended use	3
c) Reproduces in all areas of the United States where plant can be grown	5

3) Time required to reach reproductive maturity by seed or vegetative methods

a) Requires more than 10 years	1
b) Requires 5-10 years	2
c) Requires 2-5 years	3
d) Requires 1 year	5

<u>** If reproduces only by seed, skip to #5</u>

4) Vegetative reproduction (by rhizomes, suckering, or self-layering)

a) Vegetative reproduction rate maintains population (plant spreads but older parts die out)	1
b) Vegetative reproduction rate results in moderate increase in population size (plant spreads <3' per year)	3
c) Vegetative reproduction rate results in rapid increase in population size (plant spreads >3' per year)	5

** If reproduces only vegetatively, skip to #11

5) Ability to complete sexual reproductive cycle in area of intended use

a) Not observed to complete sexual reproductive cycle in the geographic area of intended use, but completes sexual reproduction in distant areas of the United States	1
b) Not observed to complete sexual reproductive cycle in the geographic area of intended use, but completes sexual reproduction in adjoining geographic areas	3
c) Observed to complete the sexual reproductive cycle in the geographic area of intended use	5

6) Frequency of sexual reproduction for mature plant

a) Almost never reproduces sexually	0
b) Once every five or more years	1
c) Every other year	3
d) One or more times a year	5

7) Number of viable seeds per mature plant each reproductive cycle

a) None (does not produce viable seed)	0
b) Few (1-10)	1
c) Moderate (11-1,000)	3
d) Many-seeded (>1,000)	5

8) Dispersal ability

a) Limited dispersal (<20') and few plants produced (<100)	1
b) Limited dispersal (<20') and many plants produced (>100)	3
c) Greater dispersal (>20') and few plants produced (<100)	7
d) Greater dispersal (>20') and many plants produced (>100)	10

9) Germination requirements

a) Requires open soil and disturbance to germinate	1
b) Can germinate in vegetated areas but in a narrow range or in special conditions	5
c) Can germinate in existing vegetation in a wide range of conditions	10

10) Hybridization

a) Has not been observed to hybridize outside the species	0
b) Hybridizes with other species in the same genera	3
c) Hybridizes with other genera	5

11) Competitive ability (of established plants)

a) Poor competitor for limiting factors	0
b) Moderately competitive for limiting factors	5
c) Highly competitive for limiting factors	10
Total Possible Points	**70**
Total Points for Part 4	_____

References

Many of the criteria used in this rating system were adapted from the following sources:

Hiebert, Ron D. and James Stubbendieck. 1993. Handbook for Ranking Exotic Plants for Management and Control. US Department of the Interior, National Park Service, Denver, CO.

Randall, John M., Nancy Benton, Larry E. Morse, and Gwendolyn A. Thornhurst. 1999. Criteria for Ranking Alien Wildland Weeds. The Nature Conservancy, Arlington, VA.

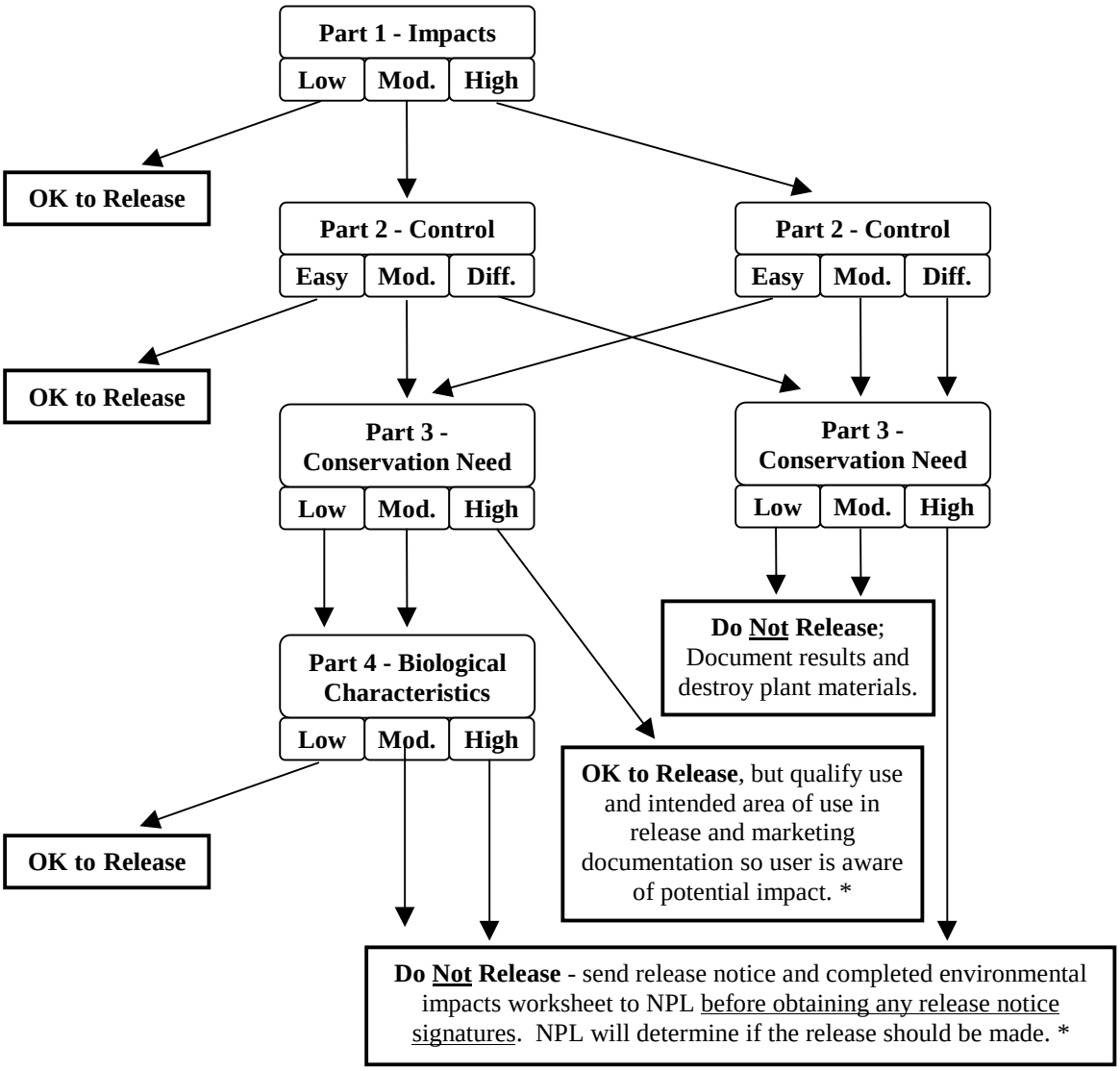
Section B. Scoring and Interpretation

Based on the scores from above, circle the points range you scored to determine the appropriate interpretation. The interpretation will be used to determine the course of action for the release.

Part	Points Scored	Interpretation
Part 1. Impacts on Habitats, Ecosystems, and Land Use	0-15	**Low** chance plant is going to affect the environment
	16-25	**Mod**erate chance plant is going to affect the environment
	26-45	**High** chance plant is going to affect the environment
Part 2. Ease of Management	0-20	**Easy** to control
	21-30	**Mod**erate to control
	31-40	**Diff**icult to control
Part 3. Conservation Need and Plant Use	0-5	**Low** need
	6-9	**Mod**erate need
	10-15	**High** need
Part 4. Biological Characteristics	0-25	**Low** chance plant is going to propagate and increase itself
	26-40	**Mod**erate chance plant is going to propagate and increase itself
	41-70	**High** chance plant is going to propagate and increase itself

Section C. Action to Take for Releasing Plants

Based on the interpretation above, follow the decision tree below. Start with your interpretation rating for Part 1 (Low, Moderate, or High) and follow the appropriate arrow to the next level until you reach a decision box. Once you reach a decision box you may stop and record the decision on the first page of this worksheet.



* Indicates that an Environmental Assessment or Environmental Impact Statement may need to be prepared prior to release (see NPMM Part 540.73(a)(3)).

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